

## REMARKS

Claims 3, 5 - 8, 10, 13, 15, 17, 21 - 23, and 25 - 30 remain in the present application.

### 103 Rejections

Claims 3, 23, 27, 25, 29 and 30 are rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Menich et al. (US Pat. No. 6,449,305 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Liu reference and Menich et al. reference, alone or together in combination.

With respect to Claim 3, the present application, as set forth in the independent Claim 3, recites:

... a transmitter which modulates data by a Hadamard function having pseudorandomly shuffled rows or columns, wherein the data is only modulated in one single modulation step with no additional modulation.

The present Office Action alleges the Liu reference discloses a CDMA transmitter (CDMA transceiver, FIG 2) comprising a CDMA baseband modulator 42(1) which modulates input data signal S1(k) in one single step by a Hadamard processor (Col. 6 lines 27-50 and Line 65 to Col. 7 line 4). To the extent the Liu reference may mention accomplishing chip level modulation functions of spreading and combining in one step, Applicant respectfully asserts that the Liu reference does not teach a Hadamard function having pseudorandomly shuffled rows or columns, wherein the data is only

modulated in one single modulation step. The present Office Action acknowledges that the Liu reference does not teach a Hadamard function having PN shuffled rows or columns.

Applicant respectfully asserts the Menich et al. reference does not overcome these and other aspects of the Liu reference. The present Office Action alleges Menich et al. reference discloses a CDMA transmitter 300 comprising an interleaver 316 (shuffle means). To the extent the Menich et al. reference may mention an interleaver interleaves the input data symbols at the symbol level, Applicant respectfully asserts the Menich et al. reference does not teach modulation by a Hadamard function having pseudorandomly shuffled rows or columns. Applicant respectfully asserts that the Menich et al. reference indicates that an orthogonal code is added to the interleaved and scrambled data signal after interleaving of the data symbols and in addition the interleaved and scrambled data are replaced by the orthogonal code (Col 4. lines 39 – 49). To the extent the Menich et al. reference may mention interleaving the input data symbols, Applicant respectfully asserts the Menich et al. reference does not teach a Hadamard function having pseudorandomly shuffled rows or columns.

Applicant respectfully asserts that Claims 5 through 8 and 10 are allowable as depending from allowable independent Claim 3.

With respect to Claim 13, the present application, as set forth in the independent Claim 13, recites:

A baseband direct sequence spread spectrum CDMA transmitter having a Hadamard function with pseudorandomly shuffled rows or columns,

wherein there is only one single modulation step for modulating the data before transmission.

The present Office Action indicates Claim 13 is rejected on the same basis as rejection for Claim 3. Applicant respectfully asserts that Claim 13 is allowable based upon rational similar to the rational provided above corresponding to Claim 3.

Applicant respectfully asserts that Claims 15, and 17 are allowable as depending from allowable independent Claim 13.

With respect to Claim 25, the present application, as set forth in the independent Claim 25, recites:

... modulating a data signal in a single step with a Hadamard function having pseudorandomly scrambled rows; ... .

The present Office Action indicates Claim 25 is rejected on the same basis as rejection for Claim 3. Applicant respectfully asserts that Claim 25 is allowable based upon rational similar to the rational provided above corresponding to Claim 3.

Applicant respectfully asserts that Claims 26 through 30 are allowable as depending from allowable independent Claim 25.

With respect to Claims 17 and 29, the present Office Action alleges that the Liu reference discloses a CDMA transmitter modulating each signal by a PN code after operation of the modulator (Col. 6 lines 52-60) and therefore, it is a code division duplex operation. To the extent the Liu reference may mention masking the L-chip signal with

the PN sequence after operation of the modulator, Applicant respectfully asserts the Liu reference does not teach a code division duplex mode of operation.

With respect to Claim 30, the present Office Action acknowledges the Liu reference does not disclose transmitting a baseband signal for peer-to-peer cellular communications. The present Office Action alleges that the Menich et al. reference discloses a base station transmitting to a remote unit (Col. 3 lines 55-60). To the extent that the Menich et al. reference may mention a CDMA transmitter in a base station for transmitting a signal to a remote unit (Col. 3 lines 55 –59), Applicant respectfully asserts the Menich et al. reference does not teach transmitting baseband signals for peer-to-peer cellular communications. In addition, Applicant respectfully asserts the Menich et al. reference teaches away from the present invention by indicating the remote unit is a cellular subscriber (Col. 1 lines 10 – 15) which is not a peer with a base station.

Claims 6, 15 and 28 are rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Menich et al. (US Pat. No. 6,449,305 B1) and further in view of Brandt et al. (US Pat. No. 6,507,573 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Liu reference, Menich et al. reference, and/or Brandt et al. reference, alone or together in combination. The present Office Action acknowledges the Liu reference and Menich et al. reference do not disclose the base band signal is spread across DC to 30 MHz. The present Office Action alleges the Brandt et al. reference discloses a user terminal transmits data in a frequency up to 30 MHz using direct spread spectrum method. To the extent the Brandt et al. reference may mention data transmission up to about 30MHz, Applicant respectfully asserts the

Brandt et al. reference does not teach RF signals are spread across DC to 30 MHz as claimed in the present application.

Claims 5 and 27 are rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Menich et al. (US Pat. No. 6,449,305 B1) and further in view Zuckerman (US Pat. No. 5,169,912 B1). The present Office Action acknowledges the Liu and Menich et al. references do not disclose actively servoing a transmit signal to cancel the transmit signal from a receive signal. The present Office Action alleges that the Zuckerman reference discloses a servo integrator controls a combiner to remove a transmit signal and keeps a desired received signal (Col. 9 line 47 to Col. 10 line 5). To the extent the Zuckerman reference may mention a servo integrator, Applicant respectfully asserts the Zuckerman reference does not teach an active servo system for canceling transmit signals from receive signals as claimed in the present application.

Claims 21 and 23 are rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Gilhousen (US Pat. No. 6,185,2460) in view of Liu (US Pat. No. 5,864,548) and further in view Zuckerman (US Pat. No. 5,169,912 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Gilhousen reference, Liu reference and/or Zuckerman references, alone or together in combination.

With respect to Claim 21, the present application, as set forth in the independent Claim 21, recites:

... modulating a data signal with an orthogonal pseudo random code;

transmitting the data signal as a baseband direct sequence spread spectrum CDMA, wherein no additional modulation is performed on the data signal before transmission; ... .

The present Office Action alleges the Gilhousen reference discloses baseband data signals are modulated by a set of orthogonal PN sequences provided by orthogonal PN sequence number generator 160 [Col. 13 lines 52 –60]. To the extent the Gilhousen reference may mention baseband signals are modulated by a set of orthogonal pseudonoise PN sequences [Col. 13 lines 57 – 59], Applicant respectfully asserts that Gilhousen does not teach modulating a data signal with an orthogonal pseudo random code. The present Office Action acknowledges that the Gilhousen reference does not teach no additional modulation is performed on the data signal before transmission.

Applicant respectfully asserts that the Liu and Zuckerman references do not overcome the shortcomings of the Gilhousen reference. The present Office Action alleges the Liu reference discloses a CDMA transmitter (CDMA transceiver, FIG 2) comprising a CDMA baseband modulator 42(1) which modulates input data signal  $S_1(k)$  in one single step by a Hadamard processor (Col. 6 lines 27-50 and Line 65 to Col. 7 line 4). To the extent the Liu reference may mention accomplishing chip level modulation functions of spreading and combining in one step, Applicant respectfully asserts that the Liu reference does not teach a Hadamard function having pseudorandomly shuffled rows or columns, wherein the data is only modulated in one single modulation step. The present Office Action acknowledges that the Lie reference does not teach a Hadamard function having PN shuffled rows or columns.

The present Office Action alleges that the Zuckerman reference discloses a servo integrator controls a combiner to remove a transmit signal and keeps a desired received signal (Col. 9 line 47 to Col. 10 line 5). To the extent the Zuckerman reference may mention a servo integrator, Applicant respectfully asserts the Zuckerman reference does not teach an active servo system for canceling transmit signals from receive signals as claimed in the present application.

Applicant respectfully asserts that Claims 22 and 23 are allowable as depending from allowable independent Claim 21.

Claim 22 is rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Gilhousen (US Pat. No. 6,185,246) in view of Liu (US Pat. No. 5,864,548), in view Zuckerman (US Pat. No. 5,169,912 B1) and ) and further in view and further in view of Brandt et al. (US Pat. No. 6,507,573 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Gilhousen reference, Liu reference, Zuckerman references and /or Brandt et al. references, alone or together in combination. The present Office Action acknowledges the Gilhousen, Liu and Zuckerman references do not disclose the base band signal is spread across DC to 30 Mhz. The present Office Action alleges the Brandt et al. reference discloses a user terminal transmits data in a frequency up to 30 MHz using direct spread spectrum method. To the extent the Brandt et al. reference may mention data transmission up to about 30MHz, Applicant respectfully asserts the Brandt et al. reference does not teach RF signals are spread across DC to 30 MHz as claimed in the present application.

Claim 26 is rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Menich et al. (US Pat. No. 6,449,305 B1), in view of Gilhousen (US Pat. No. 6,185,2460), and further in view of Krylov et al (US Pat. No. 6,211,828 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Liu reference, Menich et al. reference, Gilhousen reference, and/or Krylov et al. reference, alone or together in combination.

The present Office Action acknowledges the Liu reference and Menich et al. reference do not disclose a D/A converter antenna is at least ten times shorter than the wavelength of the signal. The present Office Action alleges the Gilhousen reference discloses a digital to analog converter. To the extent the Gilhousen reference may mention a D/A converter, Applicant respectfully asserts the Gilhousen reference does not teach converting a digital data signal into an equivalent analog signal as claimed in the present application. The present Office Action alleges the Krylov et al. reference discloses a mobile phone having an antenna whose length is quarter of the wavelength of a signal. To the extent the Krylov et al. reference may mention a quarter wavelength antenna, Applicant respectfully asserts that the Krylov et al. reference does not teach the antenna is at least ten times shorter than the wavelength of the signal being transmitted. In addition, Applicant respectfully asserts the Krylov et al. reference arguably teaches away from the present claimed invention by indicating an antenna is typically 1/4 or greater (e.g., 3/4) the wavelength [Col. 1 lines 10 – 15].

Claim 7 and 10 are rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Krylov



et al. (US Pat. No. 6,211,828 B1). Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Liu reference and/or Krylov et al. reference, alone or together in combination.

The present Office Action acknowledges that the Liu reference does not teach an antenna is at least ten times shorter than the wavelength of the signal. The present Office Action alleges the Krylov et al. reference discloses a mobile phone having an antenna whose length is quarter of the wavelength of a signal. To the extent the Krylov et al. reference may mention a quarter wavelength antenna, Applicant respectfully asserts that the Krylov et al. reference does not teach the antenna is at least ten times shorter than the wavelength of the signal being transmitted. In addition, Applicant respectfully asserts the Krylov et al. reference arguably teaches away from the present claimed invention by indicating examples of antennas that are typically matched at 1/4 and greater at 3/4 the wavelength [Col. 1 lines 10 – 15].

With respect to Claim 10, the present Office Action alleges that the Liu reference discloses a CDMA transmitter modulating each signal by a PN code (Col. 6 lines 52-60) and therefore, it is a code division duplex operation. To the extent the Liu reference may mention masking the L-chip signal with the PN sequence after operation of the modulator, Applicant respectfully asserts the Liu reference does not teach a code division duplex mode of operation.

Claim 8 is rejected in the above referenced Office Action, under 35 U.S.C. 103 (a) as being unpatentable over Liu (US Pat. No. 5,864,548) in view of Krylov et al. (US Pat. No. 6,211,828 B1) and further in view of Chadwick et al. (Us Apt. no. 6,005,891).

Applicant respectfully submits that the present claimed invention is neither shown nor suggested by the Liu reference, Krylov et al. reference, and/or Chadwick reference alone or together in combination.

The present Office Action acknowledges the Liu and Krylov et al. references do not disclose an antenna is driven mismatched. The present Office Action alleges the Chadwick et al. reference discloses a spread spectrum receiver that determines an impedance mismatch of an antenna [Col. 1 lines 35 – 55]. To the extent the Chadwick reference may mention detecting the mismatch of a receiver's antenna, Applicant respectfully asserts the Chadwick reference does not teach the antenna is driven mismatched.

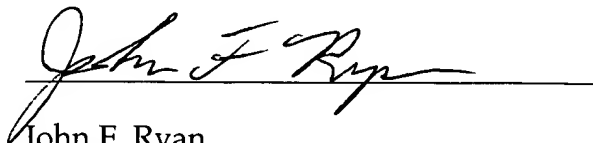
#### Conclusion

In light of the above-listed remarks, Applicant respectfully requests allowance of the remaining Claims. The examiner is urged to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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